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ABSTRACT

The effectiveness of noncognitive and cognitive variables in predicting student persistence was studied. A total of 698 black freshmen entering North Carolina Central University in 1978 were studied. Sixty-one percent of the sample were female; 83 percent were between 18 and 22 years old; and 65 percent were from cities and towns with populations under 50,000. Data sources were a 1978 survey, Scholastic Aptitude Test scores and high school rank, and a file tracking all entering students each year. Discriminant analysis was undertaken using 19 variables, including the following: age; extent to which the high school class was desegregated; father's and mother's occupational level and education; family income; change in family's economic status in the last 10 years; parent's feelings about the students' secondary school grades; studying and aspirations to be on the Dean's list; value placed on obtaining good grades; and academic aspirations. For the 1980 data set, analysis of 19 variables for the same students 2 years after their university entrance correctly classified 67 percent of the discontinuing students and 62 percent of the enrolled students. It is suggested that future analysis may identify a relatively small group of variables that will identify students likely to persist. (SW)

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An Analysis of Variables Which Discriminate Between Persisting and Non-Persisting Students

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This paper was presented at the 1982 Annual Conference of the Southern Association for Institutional Research held in Birmingham, Alabama, October 1982. It was reviewed by the SAIR Publications Committee and was judged to be of high quality and of interest to others concerned with the research in higher education. This paper has therefore been selected to be included in the ERIC collection of Conference Papers.

Gerald W. McLaughlin
President, SAIR

An Analysis of Variables Which Discriminate Between Persisting and Non-Persisting Students

During the latter half of the 1970's, many colleges were faced with stable or even declining enrollments due to a reduction in the number of students of traditional college age. During the 1980's, this problem will continue and may well be compounded by a sharp reduction in federal financial aid. Aggressive recruitment and marketing practices may not be the best solution to the overall enrollment problem. Since the pool of available students will be shrinking and competition for students in this pool will increase, an alternative or perhaps complimentary focus may be to identify those student most likely to persist. The present study will examine this study.

Demographic factors have been found to have a relationship to attrition. Wallace and Harris (1978), examined the attrition rate of 1974 entering freshmen in a longitudinal study. Age, race, and enrollment status significantly distinguished the retained from the droupout students. The retention rate of Black students was reported to be higher than that of the White students.

Carr and Chittum (1979), surveyed 21 state supported senior and junior colleges in Virginia in an effort to identify non-academic factors which may positively influence the recruitment and retention of "Other Race" students. They found that, for all institutions, recruitment and special admission procedures account for the largest number of non-academic activities reported. Fewer than half of the 21 institutions reported that they provided counseling and instructional outreach activities for newly

accepted and entering students. The predominant activities at Black colleges were student organization activities and athletic activities.

Parental expectation of success was the unit of analysis in a study conducted by Iwai and Churchill (1979). In this study comparable groups of undergraduate students, withdrawers and persisters, were surveyed and compared in terms of their self-perceived parental expectations of academic success. Students who entered college directly from high school reported greater parental expectations of success than transfer students. Withdrawers reported less parental expectation of success than persisters.

Money is thought to be a key influence in attrition and retention. However, lack of money may not be the major factor in student droupout rates. Some studies show that attrition rates are more affected by learner attributes and goals. Also a good "fit" between students and institution is seen as a major factor in retention and attrition (Wene, 1977).

Terenzini and Pascarella (1977) report the results of a study which supports Tinto's (1975) theory of student attrition. Tinto's theory asserts that withdrawal relates most directly to students integration in the social and academic systems of an institutions. Terenzini and Pascarella examined the validity of this theory and report evidence which not only supports Tinto's theory but further suggests that informal interactions with faculty plav an important role as well.

Peng and Fetters (1978), report data from the National Longitudinal Study of the High Class of 1972. The results indicate that women are more likely to withdraw only in two year colleges. Additional evidence indicates that Whites are more likely to withdraw than Blacks. Also, high school programs, college grades, and educational aspiration are significantly related to withdrawal, but receipt of financial aid is not.

A previous study on the population to be included in this study (Pratt, Hengstler, Uhl, & Reichard, 1981) identified several non-cognitive variables which, singly and incombination, significantly increased the variance in the first semester grade point average accounted for by the traditional cognitive variables (Scholastic Aptitude Test Scores and rank in the high school class). The present study will examine the effectiveness of these previously identified non-cognitive and cognitive variables other variables such as age, degree of segregation of the high school class, parents' occupation and education and the education aspirations of the student) in identifying students who will persist.

METHOD

Subjects. The subjects in this study were 699 students who entered North Carolina Central University in 1976. All were first time freshmen and all were black. Since the number of white freshmen was too small to permit adequate comparison, these students were eliminated from the sample.

Preparation of Data. Three sources of data were combined to produce the data set used in the analyses. The first were the

responses of the 698 black students who entered the university in 1978 to a survey administered in freshmen seminars in the fall of that year. All non-cognitive variables and age were derived from this source. The second data source was the admissions file from 1978. Scholastic Aptitude Test (SAT) scores and rank in the high school class (HSR) were taken from that file. The third data source was the file created to track all students entering the university from year to year. Each year a new variable indicating each student's status in that year is added to the file. Thus each student in the file could be identified as enrolled, suspended (for academic reasons) graduated or discontinued. Since these students entered as freshmen in 1978, only one had graduated in 1981. These three files were merged into a new file, retaining only those students who completed the freshmen survey.

Data Analysis. Two types of analyses were computed. First, several descriptive statistics were computed to provide an overall picture of the sample. Second analyses were computed to determine the extent to which a combination of cognitive and non-cognitive variables discriminate between those students who remain enrolled in the university and those who do not remain. Students who were suspended for ~~non-~~academic reasons were eliminated as was the one student who graduated.

Table I contains a summary of the variables used in the analysis.

RESULTS AND DISCUSSION

Sixty-one percent of the sample were female, a percentage that corresponds closely the percent of females in the entire freshmen

TABLE I

Summary of Variables Entered into the Discrimination Analysis

1. Age
2. Extent to which the high school class was desegregated
3. Father's occupational level
4. Mother's occupational level
5. Father's education
6. Mother's education
7. Family's Income
8. Change in family's economic status in the last 10 years
9. How important was it to your parents that you received good grades in secondary school?
10. Compared with most of your classmates, how much would you say you studied in college?
11. Do you think your fellow students in high school thought of you as a hard worker?
12. Did you try harder to get on (and stay on) the Dean's list than the average student in your high school class?
13. Do you tend to give up or delay on uninteresting assignments?
14. In terms of your own personal satisfaction, how much importance do you attach to getting good grades?
15. Did you regard yourself as a more consistent and harder worker in your classroom assignments than the typical student in your high school class?
16. What is the highest level of education you plan to complete beyond high school?

class in 1978. The majority, 83%, of the students in the sample were between 18 and 22 years of age while 13% were under 18 and 4% were over 22. Most (over 65%) were from cities and towns with populations under 50,000.

After the suspended and graduated students were eliminated and the analysis programs performed a list-wise deletion of variables, the final data set for the three discriminant analyses was 244.

The functions formed by a linear combination of the 19 variables correctly classified 77% of the discontinuing students and 71% of the enrolled students of the 1979 data set. For the 1980 data set, that is considering the same students two years after the students entered the university, 19 variables formed discriminant functions that correctly classified 67% of the discontinuing students and 62% of the enrolled students. The final discriminant function computed from the 1981 data on the students, correctly classifed 67% of the discontinuing students and 60% of the enrolled students. For each of the three analyses, the prior probabilities were 50% for each classification.

This linear combination of variables correctly classified more students than might have been correctly classified by flipping a coin. However, the percent of students correctly classified into enrolled and discontinuing categories was not in the 85-90% range that would make these functions practical tools for identifying those students most likely to withdraw.

Although the results of this study are not immediately applicable, further study is indicated. Future analysis may

well identify a relatively small group of variables which will be useful in identifying students likely to remain enrolled.

At that point, the extent to which the results can be used in a way which is practical is dictated by the amount of use studies of this kind get from student affairs personnel. This is particularly true in the areas of recruitment and admissions. When the results show that students with certain characteristics or attributes are more likely to persist than will students with a different set of attributes, then the recruitment process can be altered accordingly. This is especially true in institutions with selective admission practices. The use of discriminant analysis to identify variables which support this practice is extremely promising.

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